

This Page Is Inserted by IFW Operations
and is not a part of the Official Record

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images may include (but are not limited to):

- BLACK BORDERS
- TEXT CUT OFF AT TOP, BOTTOM OR SIDES
- FADED TEXT
- ILLEGIBLE TEXT
- SKEWED/SLANTED IMAGES
- COLORED PHOTOS
- BLACK OR VERY BLACK AND WHITE DARK PHOTOS
- GRAY SCALE DOCUMENTS

IMAGES ARE BEST AVAILABLE COPY.

**As rescanning documents *will not* correct images,
please do not report the images to the
Image Problem Mailbox.**

WHAT IS CLAIMED IS:

1. A cooling system for a switching power supply, said power
5 supply having a primary circuit comprising a semiconductor switch,
wherein said cooling system comprises:

(a) a capacitor and diode in series, together connected in parallel
with said switch;

(b) a power converter connected in parallel with said capacitor;
and

(c) a cooling element powered by said power converter for
15 cooling said switching power supply.

2. The cooling system of claim 1, wherein said cooling element
is a variable speed fan and wherein the voltage at said fan varies in
proportion to the current provided to said primary circuit.

3. The cooling system of claim 1, wherein said cooling element
is a liquid pump.

4. The cooling system of claim 1, wherein said cooling element
25 is a Peltier device.

10020449-121101

5. The cooling system of claim 1, wherein said power converter is a DC/DC converter.

6. The cooling system of claim 1, wherein said power converter is a DC/AC converter.

7. A method of cooling a switching power supply, said power supply having a primary circuit comprising a semiconductor switch, comprising the steps of:

(a) electrically connecting a series-connected capacitor and diode in parallel with said switch;

(b) electrically connecting a power converter in parallel with said capacitor;

(c) electrically connecting a cooling element to the output of said power converter;

(d) shunting energy from said switch through said diode to said capacitor;

(e) discharging energy from said capacitor to said power converter to power said cooling element; and

(f) operating said cooling element to cool said switching power supply.

8. The method as defined in claim 7, wherein said cooling element is a variable speed fan, and wherein the output of said fan varies automatically in proportion to the current supplied to said primary circuit.

5

9. The method as defined in claim 7, wherein said cooling element is a liquid pump.

10

10. The method as defined in claim 7, wherein said cooling element is a Peltier device.

11. The method as defined in claim 7, wherein said power converter is a DC/DC converter.

15

12. The method as defined in claim 7, wherein said power converter is a DC/AC converter.

20

13. A cooling system for an electrical system having a switching power supply, said power supply having a primary circuit comprising a semiconductor switch, wherein said cooling system comprises:

(a) a capacitor and diode in series, together connected in parallel with said switch;

25

(b) a power converter connected in parallel with said capacitor; and

10020449-12101

- (c) a cooling element powered by said power converter for cooling said electrical system.

14. The cooling system of claim 13, wherein said cooling element
5 is a variable speed fan and wherein the voltage at said fan varies in proportion to the current provided to said primary circuit.

15. The cooling system of claim 13, wherein said cooling element
10 is a liquid pump.

16. The cooling system of claim 13, wherein said cooling element
is a Peltier device.

17. The cooling system of claim 13, wherein said power converter
15 is a DC/DC converter.

18. The cooling system of claim 13, wherein said power converter
is a DC/AC converter.

20 19. A method of cooling an electrical system having a switching power supply, said power supply having a primary circuit comprising a semiconductor switch, comprising the steps of:

25 (a) electrically connecting a series-connected capacitor and diode in parallel with said switch;

- (b) electrically connecting a power converter in parallel with said capacitor;
- (c) electrically connecting a cooling element to the output of said power converter;
- (d) shunting energy from said switch through said diode to said capacitor;
- (e) discharging energy from said capacitor to said power converter to power said cooling element; and
- (f) operating said cooling element to cool said electrical system.

20. The method as defined in claim 19, wherein said cooling element is a variable speed fan, and wherein the output of said fan varies automatically in proportion to the current supplied to said primary circuit.

21. The method as defined in claim 19, wherein said cooling element is a liquid pump.

22. The method as defined in claim 19, wherein said cooling element is a Peltier device.

23. The method as defined in claim 19, wherein said power converter is a DC/DC converter.

24. The method as defined in claim 19, wherein said power converter is a DC/AC converter.

10020449-121101
TOP SECRET 64702001